Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-28 (Cancelled)

Claim 29 (Currently Amended) A living body optical measurement system ~~according to claim 28~~ comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal, wherein for the at least two sets of combination of light irradiation and light detection positions, the distance between the light irradiation and light detection positions being equal for each set.

Claim 30 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~ comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at

least two sets of combination of light irradiation and light detection positions are provided, and

a logarithmic amplifier and a differential amplifier, wherein ~~the~~ a light detection signal is logarithmically amplified and then a logarithmic difference signal is generated by the differential amplifier, and wherein the logarithmic difference signal between detection signals for the respective sets is used as a measured signal.

Claim 31 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal, wherein said light irradiation means includes an optical fiber for connecting ~~the~~ a light source and the light irradiation position, and said light detection means includes an optical fiber for connecting a photodetector and the light detection position.

Claim 32 (Previously Presented) A living body optical measurement system according to claim 29 comprising a light detection probe unit for fixing an optical fiber end of said light irradiation means and an optical fiber end of said light detection means, and an optical measuring unit including an electric signal processing circuit

comprised of a light source of said light irradiation means and a photodetector of said light receiving means.

Claim 33 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~ comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal,

wherein a light irradiation position, a first detection position, a second detection position, a third detection position set on a half line extending from its origin at the light irradiation position to pass through the first detection position, and a fourth detection position set on a half line extending from its origin at the light irradiation position to pass through the second detection position, wherein a first logarithmic difference signal ~~(first logarithmic difference signal)~~ between light detection signals detected at said first and third detection positions and a second logarithmic difference signal ~~(second logarithmic difference signal)~~ between transmitting light intensity levels detected at said second and fourth detection positions are measured, and a difference signal between said first and second logarithmic difference signals is measured.

Claim 34 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~ comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal, the light irradiation means including:

first light irradiation means for irradiating light on the surface of the living body;

first irradiation light intensity detection means for detecting the irradiation light intensity from said first light irradiation means;

second light irradiation means for irradiating light on the surface of the living body;

second irradiation light intensity detection means for detecting the irradiation light intensity from said second light irradiation means;

light detection means for detecting the intensity of light attributable to said first light irradiation means or said second light irradiation means and transmitting through the interior of the living body so as to go out of the surface of the living body;

means for generating a first logarithmic difference signal ~~(first logarithmic difference signal)~~ between an output of said first irradiation light intensity detection means and an output of said light detection means attributable to said first light irradiation means;

means for generating a second logarithmic differences signal ~~(second logarithmic difference signal)~~ between an output of said second irradiation light intensity detection means and an output of said light detection means attributable to said second light irradiation means; and

means for measuring a difference signal between said first and second logarithmic difference signals.

Claim 35 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal;

wherein irradiation light from said light irradiation means is modulated in intensity, and only a frequency component of the detection signal from said light detection means which equals a frequency for the intensity modulation is extracted for use by a lock-in amplifier or through a Fourier transform processing.

Claim 36 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the

interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal;

wherein ~~the~~ a number m of wavelengths of irradiation light equals ~~the~~ a number n of light irradiation positions, and n×m kinds of intensity modulation frequencies for the light source are used.

Claim 37 (Currently Amended) A living body optical measurement method using the living body optical measurement system ~~as recited in claim 28,~~comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal;

wherein measurement is carried out by setting the light irradiation position and the light detection positions on the surface of the living body such that a signal from a region where extinction characteristics changes locally on the basis of a change in hemodynamic movement in the living body is contained in a light intensity signal detected at at least one light detection position but is not contained in a light intensity signal detected at at least another light detection position.

Claim 38 (Currently Amended) A living body optical measurement system ~~according to claim 28,~~comprising:

light irradiation means for irradiating light on the surface of a living body and light detecting means for detecting the intensity of light transmitting through the interior of the living body and going out of the surface of the living body, wherein at least two sets of combination of light irradiation and light detection positions are provided, and a logarithmic difference signal between detection signals for the respective sets is used as a measured signal;

wherein after a logarithmic difference signal between different sites of detection position is so adjusted as to be zero under the condition that the change does not occur at the region where extinction characteristics changes locally in the living body, measurement is started and a displacement value of the difference signal is used as the measured signal.

Claim 39 (Currently Amended) A living body optical measurement system according to claim 29, comprising a logarithmic amplifier and a differential amplifier, wherein ~~the~~ a light detection signal is logarithmically amplified and then a logarithmic difference signal is generated by the differential amplifier.

Claim 40 (Currently Amended) A living body optical measurement system according to claim 29, wherein said light irradiation means includes an optical fiber for connecting ~~the~~ a light source and the light irradiation position, and said light detection means includes an optical fiber for connecting a photodetector and the light detection position.

Claim 41 (Currently Amended) A living body optical measurement system according to claim 29, ~~comprising a~~wherein a light irradiation position, a first detection position, a second detection position, a third detection position set on a half line extending from its origin at the light irradiation position to pass through the first detection position, and a fourth detection position set on a half line extending from its origin at the light irradiation position to pass through the second detection position, wherein a first logarithmic difference signal ~~(first logarithmic difference signal)~~ between light detection signals detected at said first and third detection positions and a second logarithmic difference signal ~~(second logarithmic difference signal)~~ between transmitting light intensity levels detected at said second and fourth detection positions are measured, and a difference signal between said first and second logarithmic difference signals is measured.

Claim 42 (Currently Amended) A living body optical measurement system according to claim 29, comprising:

the light irradiation means including

first light irradiation means for irradiating light on the surface of the living body;

first irradiation light intensity detection means for detecting the irradiation light intensity from said first light irradiation means;

second light irradiation means for irradiating light on the surface of the living body;

second irradiation light intensity detection means for detecting the irradiation light intensity from said second light irradiation means;

light detection means for detecting the intensity of light attributable to said first light irradiation means or said second light irradiation means and transmitting through the interior of the living body so as to go out of the surface of the living body;

means for generating a first logarithmic difference signal ~~(first logarithmic difference signal)~~ between an output of said first irradiation light intensity detection means and an output of said light detection means attributable to said first light irradiation means;

means for generating a second logarithmic differences signal ~~(second logarithmic difference signal)~~ between an output of said second irradiation light intensity detection means and an output of said light detection means attributable to said second light irradiation means; and

means for measuring a difference signal between said first and second logarithmic difference signals.

Claim 43 (Previously Presented) A living body optical measurement system according to claim 29, wherein irradiation light from said light irradiation means is modulated in intensity, and only a frequency component of the detection signal from said light detection means which equals a frequency for the intensity modulation is extracted for use by a lock-in amplifier or through a Fourier transform processing.

Claim 44 (Currently Amended) A living body optical measurement system according to claim 29, wherein ~~the~~ a number m of wavelengths of irradiation light equals ~~the~~ a number n of light irradiation positions, and n×m kinds of intensity modulation frequencies for the light source are used.

Claim 45 (Previously Presented) A living body optical measurement method using the living body optical measurement system as recited in claim 29, wherein measurement is carried out by setting the light irradiation position and the light detection positions on the surface of the living body such that a signal from a region where extinction characteristics changes locally on the basis of a change in hemodynamic movement in the living body is contained in a light intensity signal detected at at least one light detection position but is not contained in a light intensity signal detected at at least another light detection position.

Claim 46 (Previously Presented) A living body optical measurement system according to claim 29, wherein after a logarithmic difference signal between different sites of detection position is so adjusted as to be zero under the condition that the change does not occur at the region where extinction characteristics changes locally in the living body, measurement is started and a displacement value of the difference signal is used as the measured signal.